2005 Annual Group Monitoring Plan

For

Herbicide Applications to Freshwater Emergent Noxious and Quarantine Weeds performed under the Noxious Weed National Pollutant Discharge Elimination System (NPDES) Permit

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Introduction

The purpose of this monitoring plan is to ensure that reliable data are collected and appropriately maintained under the Noxious Weed National Pollution Discharge Elimination System (NPDES) permit for freshwater emergent plants listed on the Washington State Noxious Weed List or on the Washington State Department of Agricultures (WSDA) quarantine list. This is required compliance monitoring. This document provides a set of operating procedures and principles to assure accurate data is obtained for analysis.

Project Description

Based on a 9th Circuit court decision, the Washington Department of Ecology (DOE) determined that NPDES permits are required for the application of pesticides to "waters of the state" in Washington State. DOE issued a statewide Noxious Weed NPDES permit to WSDA in June 2002. WSDA in turn, provides coverage to cooperators for noxious weed herbicide applications in state waters.

The Noxious Weed NPDES permit requires monitoring of aquatic herbicides applied to manage the growth of state-listed noxious weeds or quarantine list plants growing in aquatic or semi-aquatic situations. This permit states that the Permittee or its designee may choose to participate in a Group Monitoring Plan or follow the monitoring schedule as set out in the permit. Monitoring was required beginning in the 2003 treatment season and thereafter.

This Freshwater Emergent Noxious and Quarantine Weeds Herbicide Monitoring Plan is a Group Monitoring Plan for herbicide applications to freshwater emergent species. The types of species covered under this monitoring plan include wetland species such as purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Polygonum cuspidatum*), reed canarygrass (*Phalaris arundinacea*) and garden loosestrife (*Lysimachia vulgaris*). However, typically terrestrial weeds that may be growing in riparian or wetland habitat may also be treated if the possibility exists for herbicide to enter water during their treatment.

Monitoring Plan Goals

The goal of this monitoring plan is to define the criteria that will be followed for sampling in 2005. All samples will be collected by WSDA staff or by cooperators under WSDA supervision. This plan is updated annually and adjusted to ensure sufficient data will be collected to answer the questions posed in the Noxious Weed NPDES permit. When this data is compiled at the end of the four-year monitoring period, we will be able to determine:

- Water herbicide concentrations after treatment using alternative methods of application,

- Water herbicide concentrations after treatment in different locations in Washington,
- Water herbicide concentrations after treating different species of noxious weeds.

Materials To Be Analyzed

The following herbicide active ingredients were allowed for use on freshwater emergent species under the Noxious Weed NPDES permit for the 2004 treatment season. It is anticipated that the same herbicides will be available for the 2005 treatment season.

- 2,4-D: 2,4-Dichlorophenoxyacetic acid, dimethylamine salt
- 2,4-D: 2,4-Dichlorophenoxyacetic acid, butoxyethyl ester
- Glyphosate: (i.e. Rodeo™, Aquamaster™, etc.) N-(phosphonomethyl)glycine, isopropylamine salt
- Triclopyr (i.e. Renovate 3™): 3,5,6-trichloro-2-pyridinyloxyacetic acid, triethylamine salt
- Imazapyr (i.e. Habitat™): 2- (4,5-dihydro-4-methyl-4-(1- methylethyl)-5-oxo - 1H-imidazol - 2-yl)-3-pyridinecarboxylic acid

Methods For Analysis

EPA publishes laboratory analytical methods that are used by industries and municipalities to analyze the chemical and biological components of wastewater, drinking water, sediment, and other environmental samples that are required by EPA regulations under the authority of the Clean Water Act and the Safe Drinking Water Act. Almost all of these methods are published by EPA as regulations at Title 40 of the Code of Federal Regulations. The methods shown in the table below were recommended by industry for the analysis of these aquatic herbicides in water.

A laboratory registered or accredited under the provisions of, Accreditation of Environmental Laboratories, Chapter 173-50 WAC, will prepare all monitoring data. The laboratory selected will be accredited for the parameter being analyzed. In 2004 Anatek Labs in Moscow Idaho, and Edge Analytical in Bellingham Washington were used. Laboratories for 2005 have not been selected yet.

2,4-D	Glyphosate	Triclopyr	Imazapyr
CAS # 94-75-7	CAS # 38641-94-0	CAS # 57213-69-1	CAS # 81510-83-0
EPA - 8151	EPA - 547	EPA - 515.1	EPA - 8151A

Parameter	Sample volume required	Container	Preservative	Laboratory Holding Time
2,4-D EPA 8151	1 liter	Brown Glass	Cool 4°C dark	48 hours
Glyphosate EPA 547	40 ml	124 ml Amber Glass	Cool, 4° C, dark	14 days
Triclopyr EPA 515.1	500 ml	Brown Glass	Cool, 4° C, dark	4 days
Imazapyr EPA 8151A	500 ml	Brown Glass	Cool, 4° C, dark	4 days

Site Selection for Sampling

Samples will be collected for as many different application methods, site locations and targeted species as is possible and include sites in both Western and Eastern Washington. Every effort will be made to ensure that samples taken reflect the number and types of applications most often occurring in the state. WSDA has very little input as to where herbicides will be used to control a given species making planning for obtaining representative samples difficult. Cooperator's treating weeds under WSDA's permit may be required to assist in sample collection and in notifying WSDA as to when applications will occur for planning purposes.

Sampling results from the 2003 and 2004 seasons indicated that very little if any herbicide has been detected in the water and in particular when samples were taken from fast moving water bodies such as rivers, streams and creeks. A total of 6 sets of samples were taken from these types of locations in 2003 and 2004. One sample showed a very low concentration of Imazapyr (2.2 ug/L) following a foliar application. Another sample showed low concentrations of Glyphosate (50 ug/L and 10 ug/L) following an injection treatment. For 2005, monitoring efforts will focus on foliar applications made to standing water and on sites receiving injection treatments.

Sample Containers

Water collected for laboratory analyses will be placed in appropriate size and style bottles that will be provided in advance by the laboratory that is to provide the analysis. All bottles will contain the proper preservatives, if needed.

Samples will be collected in a manner that ensures that any preservatives are not lost when filling the bottles.

The sample bottles will be labeled prior to being filled to indicate the sample date and time, site location, name of person collecting the sample and analyses to be performed. All information pertinent to the sample collection will be recorded on monitoring data sheets. The information will include: date, time of sample collection, name of person collecting the sample and sample locations within the waterbody as well as other information. Chain of custody documentation will also be utilized to ensure sample integrity.

Preservation

Methods for preservation are relatively limited and are intended to retard biological action, retard hydrolysis and photalysis of chemical compounds, and reduce the volatility of constituents. Follow the preservation methods recommended by the laboratory for the analysis. Most of the herbicides are light sensitive and should immediately be stored in the dark. Samples will be kept cold and in the dark by keeping them on ice in an ice chest until they are delivered to the laboratory as per the laboratory's shipping procedures. Samples will be transported and shipped using ice packs or double bagged ice depending upon the laboratories instructions.

Sampling Procedures

General sampling provisions:

- The person sampling will not be the applicator or use the applicator's boat or equipment when at all possible due to the possibility of sample contamination.
- Surface water samples will be taken adjacent to the plant bed (within one foot) and, if in flowing water, taken on the downstream side of the infestation towards upstream within 20 feet of the treated plants.
- Care will be taken to avoid disturbing sediments in the immediate area of sample collection.
- Sample bottles will be labeled as described under "Sample Containers" above. Monitoring forms will be used to record all pertinent data regarding the sample.
- Every effort will be made to maintain consistency in sampling method, equipment used, or station locations between sampling stations or sampling days without noting why the change was made and permanently identifying which data belongs to which set of sampling techniques or equipment used.
- The sampling bottles will be kept unopened until the moment they are to be filled.

- Suitable air space will be left in the bottle to allow proper mixing of the water sample.
- Samples will be placed in individual plastic bags to prevent cross contamination.

Sampling protocol:

- Immediately prior to treatment, a surface water sample will be collected adjacent to the edge of the infestation to be treated (within one foot of the plants).
- One hour after the entire target infestation is treated, another surface water sample will be collected.
- A final sample will be taken, in approximately the same place as the one-hour sample, 24 hours after treatment.